

REMARKS

This Amendment serves as the submission accompanying Applicants' Request for Continued Examination (RCE) filed pursuant to 37 C.F.R. §1.114. By final Office Action mailed July 28, 2004, pending claims 1, 33 and 34 stood rejected, reconsideration of which is respectfully requested in view of the above amendments and the following remarks. Claim 1 has been amended. Claims 1, 33 and 34 are now pending.

Claim Amendment

By way of this Amendment, Applicants have amended claim 1 to further clarify that the present invention is directed to a method of controlling the flow rate of a fluid sample *flowing through a microfluidic channel* by adding a step specifically reciting "flowing the fluid sample and the second fluid through the microfluidic channel in laminar flow". Support for this amendment may be found generally throughout the specification, and, in particular, in Figure 2, and the corresponding description of such Figure in paragraphs [0012] and [0013] of the specification. Applicants submit that no new matter has been added by way of this amendment.

Rejections Under 35 U.S.C. §102(e)

Claims 1 and 33-34 are rejected under 35 U.S.C. §102(e) as anticipated by Vigh et al. (U.S. Patent No. 6,511,850) or Weigl et al. (U.S. Patent No. 6,454,945). With respect to Vigh, the Examiner alleges that Vigh discloses a method of supplying a first fluid containing an analyte and a second fluid that sheathes the first fluid, wherein the resistance between the two fluids is substantially negligible. The Examiner then concludes that if there is minimal resistance between the sheathed fluids, the two fluids would flow at the same rate, as recited in the pending claims. With respect to Weigl, the Examiner alleges that Weigl discloses a method of controlling a flow of a first fluid that is sheathed by the flow of a second fluid, wherein the two fluids have equal flow rates.

Applicants respectfully disagree with the Examiner's application of Vigh and Weigl. The flow rate of a fluid stream through a microfluidic channel has a parabolic distribution, namely, the flow rate is slower near the walls of the channel and faster toward the

center of the channel. In addition, it has been shown that a "center region" of this parabolic distribution is substantially flat, representing a constant flow rate across the region. See Figure 1 and paragraphs [0008] and [0009] of the specification. The present invention is directed to a method wherein the flow rate of a fluid sample flowing through a microfluidic channel is controlled by sheathing the fluid sample within this "center region" of a second fluid flowing through the microfluidic channel. As a result, and as recited in pending claim 1, (1) the flow rate of the fluid sample is substantially equal to the flow rate of the second fluid at the interface between the second fluid and the fluid sample, and (2) the flow rate of the fluid sample is constant across the center region. In other words, the parabolic flow rate distribution normally observed in fluids flowing through microfluidic channels will be eliminated with respect to the fluid sample.

Neither Vigh, nor Weigl, discloses a method for controlling the flow rate of a fluid sample, wherein the flow rate of the fluid sample, which is completely sheathed by a second fluid, is constant across the fluid sample. Vigh merely discloses a method wherein the resistance between a fluid sample and a second/sheath fluid is minimized such that the flow rate of the sample fluid is not affected upon sheathing with the second/sheath fluid (*i.e.*, the sample fluid will maintain its parabolic flow rate distribution). Similarly, Weigl merely states that in the method disclosed therein, fluids flowing in parallel laminar flow may have equal flow rates.

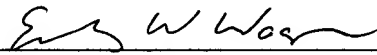
Accordingly, in view of the foregoing, Applicants submit that neither of the foregoing references disclose every element of pending independent claim 1, nor do either of such references contain any teaching or suggestion to modify the methods disclosed therein in order to produce a method comprising every element of pending claim 1. As for dependent claims 33 and 34, since these claims are dependent from, and thus contain all the limitations of claim 1, they are patentable for the same reasons. Accordingly, Applicants request that this ground of rejection be withdrawn.

In view of the above amendment and remarks, allowance of claims 1, 33 and 34 is respectfully requested. A good faith effort has been made to place this application in condition for allowance. However, should any further issue require attention prior to allowance, the Examiner is requested to contact the undersigned at (206) 622-4900 to resolve the same. Furthermore, the Commissioner is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,

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